Acnet Device Indexes

As used for Acnet alarms

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To bridge the gap between the device information a front end needs and that which the Acnet central system needs, the Acnet system developed the 8-byte SSDN structure that comes from the central database and is sent to a front end to describe a device whose data is requested or that is to be set. To support Acnet alarm reporting, in which the front end initiates an alarm message, an 8-byte EMC structure was defined to carry front end device information to the central system. The EMC is a key into the Acnet database, just as the device index is a key.

But it has been (is being?) decided to eliminate the use of the EMC key, so that a front end must use a central database key, rather than its own key, in reporting alarms. This means that the front end must store these keys that have no other significance for its own operations. The central Acnet system must transfer these keys to the front end.

MOOC front ends know nothing at boot time; all device information must be downloaded to them every time they boot. IRM front ends know everything about the devices to which they connect, because they utilize nonvolatile memory for this purpose. Indeed, because of this, IRMs can operate in non-Acnet environments.

If IRMs are forced to retain Acnet database device index values, they must be downloaded to the front end at some point. The natural time for this to occur is when other database information is downloaded, such as when someone performs DABBEL input.

Inside the IRM, a table must be defined to house this information. The required size of the table is 4 bytes times the number of analog channels. Most IRMs are allocated for a maximum of 1024 channels, but some in Linac may need an allocation of 2048. To store a device index for 1024 channels requires 4K bytes; 2048 channels require 8K bytes.

By storing the device index information in nonvolatile memory, it does not need to be refreshed following a front end boot. But it does need to be downloaded initially for all existing Acnet devices in order to populate the nonvolatile table.

The system code in an IRM is not affected by this, except that a new nonvolatile table must be defined. The local application AERS shepherds Acnet alarm messages to AEOLUS, so it will have to be modified to include the appropriate device index values in the alarm message it emits. Maybe the current EMC field within an Acnet alarm message format will be set to zero except for the front end node number fields. Or, if the rest of the EMC field is nonzero, it could be assumed that the Vax should use it in the old-fashioned way. This may help out during the transition to eliminate EMCs.